

ISS Multi-Material Fabrication Laboratory using Ultrasonic Additive Manufacturing Technology, Phase I

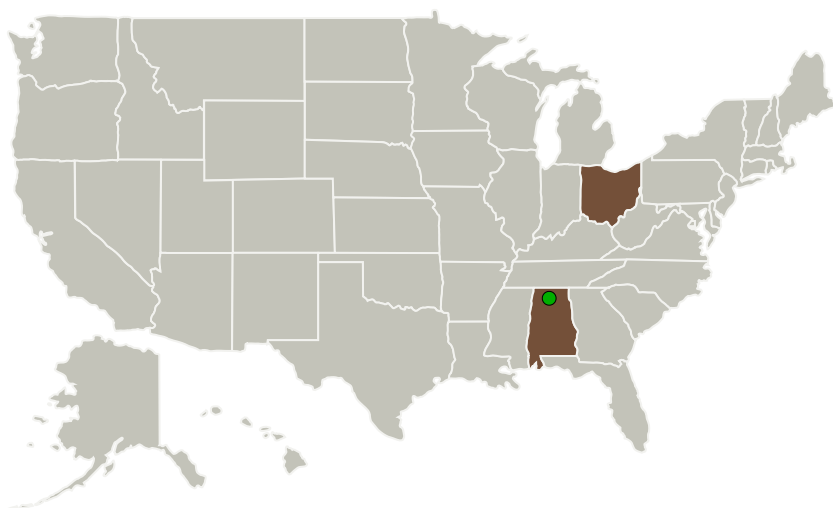
Completed Technology Project (2017 - 2017)



Project Introduction

The goal of this program is to demonstrate the use of Ultrasonic Additive Manufacturing (UAM) solid state metal 3D printing to provide in-space, on-demand manufacturing capabilities to support the unique challenges of long-duration human spaceflight. Previous and ongoing work in NASA SBIR programs has demonstrated the ability to 3D print quality metal parts using UAM. The goal of this Phase I program is to demonstrate the feasibility to reduce the size and power consumption of current UAM machine technology to 3D print aerospace grade aluminums for In-Space manufacturing. In fact, for the UAM process, operation in a micro-gravity environment contributes to power reduction goals expressed in recent NASA documents (NASA, 2016).

Primary U.S. Work Locations and Key Partners



ISS Multi-Material Fabrication Laboratory using Ultrasonic Additive Manufacturing Technology, Phase I Briefing Chart Image

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Organizations Performing Work	Role	Type	Location
● Marshall Space Flight Center (MSFC)	Supporting Organization	NASA Center	Huntsville, Alabama

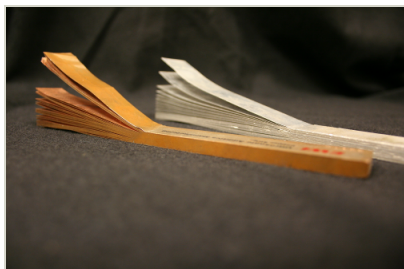
Primary U.S. Work Locations	
Alabama	Ohio

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Images



Briefing Chart Image

ISS Multi-Material Fabrication Laboratory using Ultrasonic Additive Manufacturing Technology, Phase I Briefing Chart Image (<https://techport.nasa.gov/image/131922>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

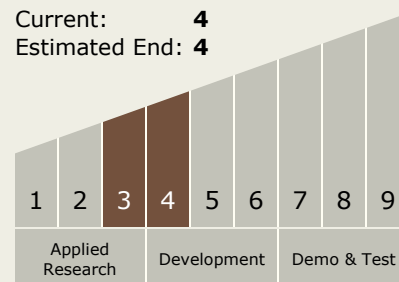
Carlos Torrez

Principal Investigator:

Robert Hagarty

Technology Maturity (TRL)

Start: 3
Current: 4
Estimated End: 4



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Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
 - └ TX12.4 Manufacturing
 - └ TX12.4.1 Manufacturing Processes

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System